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ABSTRACT

The purposes of this paper are to examine the effects of synchronic description in distinguishing between interference and integration in cases of language contact, and to suggest alternative methods of description suitable for the analysis of systems in motion. The "synchronic fallacy" is defined here as the belief that one can describe a language as if at any one point in time its code were stable. The author first considers the implications of "synchronic fallacy" to see how it relates to the distinction between integration and interference. He then studies the possible ways of measuring integration and analyzes the quantitative relationship between integration and availability with sample measurements. While the author does not feel that this may be the only way out of the dilemma, he hazards the following general conclusions on the analysis of integration as distinct from interference: (1) conventional synchronic analysis is unsuited to the description of mixed and rapidly changing codes; (2) code integration is relative; (3) its relativity can be measured; and (4) interference can be stated in terms of this relative integration. [Not available in hardcopy due to marginal legibility of original document.] (AMM)

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Outline

0. Introduction

1. The Synchronic Fallacy
   - 1.1 Limitations of Synchronic Descriptions
   - 1.2 The Entropy of Evolving Codes

2. Integration and Interference
   - 2.1 The Problem of Identification
   - 2.2 The Problem of Relativity

3. Measuring Integration
   - 3.1 Measuring from the Message
   - 3.2 Measuring from the Code

4. Integration and Availability: Sample Measurements
   - 4.1 Scope and Method
   - 4.2 Analysis and Probabilities
     - 4.2.1 Probabilities
     - 4.2.2 Relationships

Conclusion

Tables:

1. Sample Population: Age and Area Distribution
2. Semantic Fields: Distribution of Vocabularies
3. Computation: Sample of Computer Print-out
4. Integration Probabilities: English into French

Figure: Integration as related to Availability

References

The purposes of this paper are 1) to examine the effects of synchronic description in distinguishing between interference and integration in cases of language contact, and 2) to suggest alternative methods of description suitable for the analysis of systems in motion.

0. INTRODUCTION

Let me begin by adopting the now old-fashioned practice of introducing and defining my key terms. By interference, I mean the use of elements of one language or dialect while speaking or writing another; it is characteristic of the message. By integration I mean the incorporation into one language or dialect of elements from another; it is characteristic of the code. What I shall call the "synchronic fallacy" is the belief that one can describe a language as if at any one point in time its code were stable.

We shall first consider the implications of (1) this "synchronic fallacy", see how it relates to the distinction, between (2) integration and interference, study the possible ways of (3) measuring integration, and analyse the quantitative relationship between (4) integration and availability with sample measurements.

1. THE SYNCHRONIC FALLACY

A code is a convention. In language it is a social convention adopted by a speech community. But at any one point, certain elements of the code are preferred to others. At any one point in time, some language signs entering the code will be adopted quickly while others will be integrated gradually; any of these may disappear quickly or gradually, independently of their rate of adoption. Since the language code and its systems are in constant motion, the most appropriate description is not a synchronic analysis but a quantum description. Because a detailed treatment of this question would lead us into a discussion of general linguistic

theory, which is evidently beyond the concern of this conference, I shall be content to refer to a recent paper which I have called "Toward a Quantum Linguistics" (Mackey 1970b) and (1) to reproduce a remark which I made at the International Seminar on the Description and Measurement of Bilingualism in 1962 (Kelly 1969) on the limitations of synchronic description before explaining why it is not suited for describing (2) the entropy of evolving codes.

1.1 LIMITATIONS OF SYNCHRONIC DESCRIPTIONS

Almost all modern linguistic theories of language, including those of Saussure, Bloomfield, and Hjelmslev, have postulated a dichotomy between diachronic and synchronic linguistics. This postulate has been workable with the type of analysis made up to now -- descriptive and historical grammars. But it is a fiction, ignorable only under two conditions: a) where language change is so slow and minute as to be imperceptible within the same generation and b) where the refinement of analysis does not go beyond distinctive features.

Since languages must evolve, there must be variation and vacillation; otherwise we would always be dealing with dead languages. The speed of language evolution through vacillation varies according to the social elements of control -- likely to be different in illiterate and bilingual communities.

In bilingual communities, the incidence of interference contributes to the degree of vacillation, and consequently to the speed at which one or more of the languages or dialects evolve. So that degrees of change which in an unilingual situation will take many generations may, under the impact of bilingualism, be realized in one.

If this is the generation whose language use is being described, the investigator is faced with what appears to him, either as interference or as a code with a high-degree of free-variation. Both are illusions conditioned by the postulate that we are dealing with one or two synchronic codes. And the treatment of bilingual material as synchronic becomes more and more complex as one multiplies cases, because in any evolving code, the degree of individual variation is a function of the rate of change.

And it is precisely the speed of this evolving code in situations of language contact that makes its description and measurement so difficult. What has to be described and measured is a two dimensional continuum, one of which is continually alternating, at the moment the other is inconsistently vacillating."

The point I want to make here is that this fiction of the synchronic, which has served so well in generating the abstractions of descriptive and transformational grammars, becomes quite unreal when used to describe the unstable and rapidly evolving systems of non-literate communities and of languages in contact. This fallacy which assumes a fixed code or norm, has led the students of language contact up a blind alley at the end of which was the impossibility of distinguishing between the two fundamental notions in the linguistic study of bilingualism, namely between integration and interference or, if you will, between interference in the code and interference in the message -- since the same term has been used for both. This fiction of synchronic description has also made it difficult to determine when interference in the code is no longer interference, that is when it becomes part of the language. At what point, for example, did French words like *ignorance, nation, paye, lingerie,* and *liqueur* become part of the English language?

Let us now go back to Saussure's original analogy where he compares a language to a game of chess, in which the state of the board is constantly changing according to certain fixed rules which the players must follow (Saussure 1915: 125-27). This is an often quoted analogy used to explain the classical dichotomy between diachronic and synchronic linguistics. The game can be described diachronically in terms of the moves of the players according to the rules, or synchronically in terms of the resulting distribution of the pawns on the board at any given point in time. The analogy and the dichotomy have indeed been useful as a basis for the elaboration of descriptive grammars and dictionaries of standardized languages, the very standardization of which is a factor in attenuating the natural variation and evolutionary tendencies of languages.

Since few speakers will deviate greatly from the norm, and these may be limited to groups that are peripheral in space and time -- dialects speakers, the very young and the very old -- the number of people so deviating will not be in the majority, especially in those few languages which have a long tradition of standardization. Even for these highly standardized languages, the analogy is far from perfect, since if one were to freeze this linguistic game of chess at any point in time, in addition to finding some pawns in some squares and others in others, one would find a number of pawns between squares, some emerging ones on one edge and entering ones on the other edge of a number of squares, squares of different sizes and dimensions, pawns of different sizes, shapes and colours -- bishops with the features of horses and horses becoming bishops -- and procedures which were laxer or stricter than others in a game where the rules are forever changing.

1.2 THE ENTROPY OF EVOLVING CODES

In other words, we would find a state of entropy, of continual transformation within the system. For all living languages are in a perpetual state of entropy -- some more than others, and at some times more than at other times.

Repeated interference from another code tends to increase this entropy, whereas literacy and standardization tend to decrease it. Two related unwritten languages will tend to blend into one more quickly than will two equally related languages with standardized written forms used by most of their speakers. And in formally standardized codes, interference will reach the point of resistence earlier than in non-standardized languages, for the gap between what speakers of standard languages say and what they know they should be saying becomes quickly more apparent and tends to promote in the literate community such formalized defenses as purism, irredentism and language repression.

In the permissible range of variation in usage, the entropy of a language is affected by the degree of tolerance of the people who speak it. Some communities tolerate interference more than do others. This tolerance may have historical determinants; but it is also related to literacy, standardization and language contact. In non-literate communities it may be wider than in literate societies. In unilingual communities, it may be less than in multilingual groups where the incidence of use of linguistic features from several languages by any individual may actually form a single continuum (Le Page 1968). And in non-literate,multilingual groups, the range of tolerance may even become identical to mutual intelligibility achieved by a speech economy whose norm is the sum of all operant codes. In such situations, the new elements entering the speech of individuals from another language or dialect may do so entirely by chance and never be heard again; or they may be repeated with such consistency as to give the impression that they have been transferred to the other

language and integrated into its code. Yet there is no indication in the occurrence of these elements in the stream of speech whether they represent such cases of integration or cases of interference. How then can one distinguish between integration and interference?

2. INTEGRATION AND INTERFERENCE

One of the most difficult puzzles in the study of bilingualism has been the separation of cases of integration (borrowing) into the code from cases of interference in the message. It involves two problems: (1) the problem of identification, and (2) the problem of relativity.

2.1 THE PROBLEM OF IDENTIFICATION

When we listen to an item from another language used in a stretch of speech we have at first no direct way of knowing whether the item has been integrated into the code of the speaker or whether he is bringing it in from another code. We do not know whether the presence of the foreign item is the result of integration into the code or interference in the message.

It is indeed possible to study one independently of the other. The sorts of integration into the code, generally called language borrowing, have been masterfully classified and analysed by Haugen in a much-quoted article (Haugen 1950). It has also been the subject of some extensive treatises (Deroy 1956).

Some indication of the integration of a word into the code may be had by observing the way it is used in the message. If it is combined with the native morphology and phonology it is likely to be more integrated than if it is not so used. For example, the English verb *check* when used in the French sentence, *Il l'a checké hier*, would indicate

some degree of integration. So could a word whose pronunciation is made to conform to the phonological structure of the native language (e.g. Spanish *estek* from *steak*). But integration into the morphological and phonological systems is very often impossible to observe in any stretch of speech containing items from another language. For example, the English word *cute* in the French sentence, *Elle est bien cute*, could be a case of borrowing or a case of interference, if we had to rely only on textual evidence. Witness also the pronunciation of integrated trade names in the radio advertising of bilingual communities.

If a French-speaking bilingual uses the word *sweater* in a stretch of speech, we have no way of knowing whether the word *sweater* has replaced *chandail* in his French, or whether he is simply introducing this word from his English code for anyone of many possible social or psychological reasons. If we discover that he does not know the French word for *sweater* and that the word *sweater* is his French way of saying *chandail*, we know that we are not up against a case of interference. On the other hand, if he does know how to say *chandail* in French, this may or may not be an indication that his use of the word *sweater* is a case of interference. Here we are up against the question of bilingual doublets such as were common in 13th and 14th Century England, where English words, like *help*, and their French equivalents, like *aid*, were used indifferently and sometimes together. For the desire of the bilingual speaker to make himself understood by his fellow bilinguals can induce him to use both his codes as an extra guarantee. We find this even in the writings produced during the bilingual periods of a country's history; in the literature of Medieval England, for example, we can read such French-English stretches of bilingual redundancy as *ignoraunce, thet is unwisdom (The Ancren Riwle, c. 1225), lord and sire, faire and fetisly* (Chaucer), *olde and auncyent doctours, glasse or mirrour* (Caxton). Were these cases of integration or of interference?

2.2 THE PROBLEM OF RELATIVITY

Even in highly literate communities there is a permissible range of variation in usage, and on close examination we find that instead of a fixed code and a positive norm, we have an unstable code and a relative norm. The word 'norm' of course, can be ambiguous, meaning either what people expect or what people do. Here we will take the norm to mean what people do and say; not what they say they do. And since all people do not always do the same things in the same ways, the norm is relative. If it were not, languages would be eternal; they would never change.

New elements are continually entering a language and old elements are dropping out. But this intake and fall-out is not sudden; it does not happen the day a new grammar or dictionary comes off the press to consecrate its contents as the norm. It is a gradual process which is observable but not observed. It takes place in time at a rate which is highly variable. And the variability of the rate is a function of numerous factors -- some stable and others unstable.

The stable factors are all internal; that is, they have to do with the nature of language and the nature of numbers. Their stability depends on the characteristics of the system in which they operate and on its dependence upon the other systems of the language. The fewer elements there are in the system, the more stable the system. A phonological system with less than a hundred units and a limited number of structures is inherently more stable than a grammatical system with a thousand units and more structures. For the number of phonemes in a language constitutes a very small class -- usually much less than a hundred items. The loss or addition of a single phoneme, therefore, is likely to disturb the system more than the loss or addition of a grammatical form. For example, if the English language were suddenly to

be deprived of the /t-d/ phoneme distinction, the whole system of systems which makes up the language would be affected more than it would by the loss of the *-ive/-ove* grammatical distinction between present (*drive, dive, strive...*) and past (*drove, dove, strove...*)

This is perhaps why most items entering the code into its larger classes have both low redundancy and high information content. In the smaller classes of linguistic items, the probability of integration of a foreign element into the code is necessarily lower; but its probability of interference in the message is correspondingly higher. Because of this, its redundancy is high and its information content low. For example, when getting the hang of a foreign accent, the strange sound which consistently replaces a certain allophone in the stream of speech does not on each recurrence add much new information to the message. We come to expect it and to take it for granted, for it can be predicted. In other words, the more predictable the interference, the less it interferes. Grammatical items, in turn, are more stable than items of the vocabulary, which may contain more than ten thousand active elements. These are much more loosely systematized than are elements of the grammar and are consequently less stable.

The inherent degree of stability of a language element, which depends on its function in the system or sub-system to which it belongs, is modified by external factors such as social change and dialect or language contact.

In bilingual communities there will be those who always use certain forms from their other language and who know no other, and yet are always understood because most of their interlocutors are bilingual. There will be for a given concept, those who know both terms and use only one. Those who know both forms and use them indifferently. In other words, the question of whether or not a given element belongs to both codes or only to one does not take a yes/no answer. It is also

a matter of degree. If everyone uses one and only one form, that form -- even though it comes from and still exists in the other language -- is part of the bilingual's languages. It can be said to have been 100% integrated into the other languages (e.g. the word *wrench* in the French of some Acadians is almost as integrated as is the word *sugar* in English).

On the other hand, if only half of the population have integrated the form into their code, it can be said to be 50% integrated. The percentage may range anywhere from near zero to 100%. Integration into a code is a matter of degree. But if integration is a matter of degree, what we need are techniques for determining the extent to which the use of a foreign item may be considered normal. In other words, we need methods for measuring the degree of integration.

3. MEASURING INTEGRATION

By what criteria can we measure the extent to which a foreign item has become part of a language code? We can take our measures either (1) from the message or, (2) from the code.

3.1 MEASURING FROM THE MESSAGE

By collecting samples of the speech of bilinguals, it is possible to identify and quantify the foreign elements that are introduced. This can be done from the point of view of their frequency or from the point of view of the range of occurrence.

From the point of view of frequency, it seems reasonable to suppose that, if the norm is what people use, the more frequently people include a foreign element in their speech, the more normal it is. How can we then determine the number of times people use a given word or form? One way of finding out is by counting the number of times that word or form comes up in suitable

samples of speech or writing. With this in mind, we obtained samples of the free speech of some fifty Acadian bilinguals. After making extensive tape recordings of the unrehearsed conversation of these bilinguals, we computed the frequency of occurrence of English items in their French speech (Mackey 1966).

It soon became evident, however, that the occurrence of an item from the other language depended largely on what the bilingual happened to be talking about at the time his conversation was being recorded. When he was talking about airplanes, the word *wing* was likely to occur more often than it did when he was talking about horses, in which case, the word *hoof* was more likely to occur. On the other hand, a very small but important part of the vocabulary always recurred, no matter what he was talking about; it included words like *est*, *à*, *de* and *je* -- most of them grammatical words. If one of these words were to be replaced by its equivalent in the other language, the number of times it was so replaced could presumably be used as a measure of its degree of integration into the receiving language. But such words -- partly because they are the most highly related to the most systematic and structured areas of the language -- were seldom replaced. The few that did occur belonged to classes, like conjunctions, representing the least structured of the structure words. If they ever did enter the language, structure words did so only after many of the content words of the general vocabulary had already been affected. Moreover, the criterion of frequency of occurrence is valid for only a small portion of the total number of elements in the language, and these include the grammatical units. For the bulk of the vocabulary, the frequencies depending as they do on the field or the situation, are unstable, and therefore unreliable (Mackey 1965a).

An approach making use of frequency of occurrence is the measurement of the degree of consistency of usage. If a foreign form is consistently used to the exclusion of any other, it may be assumed that the form has been completely integrated into the code. But how can one prove that the usage of such a form is one hundred

percent consistent? Another difficulty arises when the degree of consistency varies continually from one situation to the next. This makes the degree of consistency difficult to measure, especially when one considers the multiplicity of situations in which individuals in a multilingual community may be involved. Yet the possibility of measurement has been demonstrated in a study distinguishing consistency of usage in various socio-economic classes of society using as many as five different styles per person (Labov 1966).

Another way of determining the degree of integration would be by counting the number of texts in which a word occurs (range). Although the most frequent words are also those which occur everywhere (have the greatest range), some words are likely to occur in certain texts more than in others. If a man is talking about the production of eggs, the words *hen* and *chicken* are more likely to occur than they would if he were talking about the production of light bulbs, paper cups or iron ingots. But the fact that these words did not occur when talking about eggs would not indicate that they were unimportant to the speaker.

Many important words are seldom used, even in situations to which they are relevant. We do not often write or talk about our *tongues* or our *noses*, but this does not mean that we have little knowledge of or use for these words. When we need them, they are available. Secondly, the number of texts is no indication of the complete range of coverage; it would be difficult to cover all the multitude of possible things about which each individual in a population may want to talk. Finally, with range as with frequency, we are dealing with the usage -- with the message as it were, rather than directly with the code which produces the message out of an infinite number of possible messages.

What we need is a criterion of integration that deals directly with the code and is likely to expose the bulk of the vocabulary covering the maximum number fields in which it is likely to be used.

3.2 MEASURING FROM THE CODE

Attempts have been made to suggest ways of finding evidence of integration into the code. These include tests of availability, acceptability and translatability. Let us first examine the uses of availability.

Availability is a measure of the potential of the items in a code. Whereas frequency of textual occurrence is a suitable measure of language forms which must be used; availability is the appropriate measure for words which may be used. These include the thousands of nouns, verbs, adjectives and adverbs which are more or less at the disposal of the bilingual speaker. How can we get at this storehouse of vocabulary? One way is by asking the subject to supply an inventory. This can be accomplished through a formal test. This availability test has the speaker list items on each code according to any number of semantic fields. To return to the above example of *sweater/chandail*, we have seen that the occurrence of one in the context of the other language was no indication of integration into the other language. What then would an availability test indicate? If a bilingual includes *sweater* on top of the list of French words for clothing, and *chandail* at the bottom of the list, we know that both items are part of his French code; if he lists only *sweater* in his French code, it is likely that it may have replaced the word *chandail*, unless that term is used with a different meaning, which is often the case for integrated items in bilingual communities. If in a recorded text therefore, we were then to find the word *sweater*, we could discount it as a probable case of interference. In other words, we first ask the bilinguals to identify their codes before analyzing samples of their speech to decide the extent to which there is interference or switching between codes.

Availability is not integration, but it can be used as a measure of the degree to which an item comes to mind as belonging to one code or the other of the bilingual. It has been used only for the non-grammatical

elements of a language -- those which serve as labels for concept categories, especially concrete nouns. Although this does not mean that we exclude abstractions, it does seem fitting that a new measure should start as close as possible to the concrete in order to permit easier evaluation. But how can such a measure be applied to a whole population and its language codes?

One way of measuring the availability of an item in a population is to take a representative sample of that population and have each person supply an inventory of the items in each conceptual, or semantic field (for example, food, clothing, housing, etc.) The type and number of conceptual fields depend on the detail and amount of information desired (Mackey 1969). For example, in the field of clothing we ask each person to supply a list of words he uses for clothing in a given language. Some words will appear on most lists, others on only a few. The number of lists on which a word appears indicates the number of people to which the word has most readily occurred within the time limit (in this case, a quarter of an hour per field). This can be stated as a percentage of the population including the word in their vocabulary of that particular field. In the case of a bilingual population, if one asks for the vocabulary of one language, one may get certain items which really belong to the vocabulary of the bilingual's other language. This may indicate a number of possibilities. The bilingual may know only the item in his other language or not know to which language the item belongs. Or he may know both items, but remember one of them more readily than the other.

If he indicates items of the other language in the list, they may well be the only items he knows for the concept that comes to his mind. But we do not have enough evidence to assume that this is always the case. We can only say that these items come more readily to his mind than do the others.

We can assume that you can get at the code which a person has in his head by asking him to write it down. If he does not include an item, however, it does not necessarily mean that it is excluded from his code. Its exclusion or inclusion may be a function of the number

of responses, which, in turn, is a function of the time taken to produce the inventory, up to the limit of the total vocabulary of the individual in a given field (Mackey 1969a).

From the inventories, we know the number of persons who have indicated a foreign word as part of their code. We do not yet know the number of persons who understand the native word and yet list the foreign word. This, however, can be checked through a test of translatability (see below). Such a test would tell us whether or not a person knows a word, but not how well he knows it. Persons with an effort of memory and enough time may be able to retrieve the native word. This is borne out in interviews with bilinguals. In such interviews, we find the subjects saying such things as "My grandmother used to say something like this". But because the native word is not uppermost in their minds, they will use the foreign word instead. Forgetting is relative, gradual, and a matter of degree.

It seems safe to assume therefore, that in the bilingual, French-English Acadian materials that we have analyzed and will use as examples, any given French word is understood and remembered to a certain degree. In a given field the possibilities are the following: i) the French word can be excluded (E. = zero), ii) the English word can be excluded (F. = zero), iii) both can be excluded (E. + F. = zero), iv) either can be dominant.

How can we measure this dominance? We assume that in any given field, the inclusion of one word rather than another is an indication that that word has been better remembered. There is a whole literature on word association which seems to bear out this assumption (cf. Marbe's Law: Thumb and Marbe 1901). For example, if a person includes the words *sweater* and *scarf* and excludes *leggings*, as types of clothing, we can assume that when thinking or talking about clothing, the corresponding words and the objects to which they refer come more readily to mind.

If for the thing "sweater" however, the bilingual can remember only the name used in the second language, we can assume that although the object comes to mind, it is associated more readily with its name in the other language. In a group of bilinguals, some will include the concept 'sweater', others will not. Of those who include it some will give the French word (*chandail*) in the French list; others will include the English word (*sweater*) in the French list, indicating that it is uppermost in their mind. If all do this, it is that word, and not its counterpart in the native language that is uppermost in the minds of most people.

If a hundred people were to include the concept 'sweater' in an inventory of their clothing, it may be assumed that that concept is available to 100% of that population. Out of this hundred who have included the concept, if fifty were to put the word *sweater* in the French list, it may be assumed that the English word is uppermost in the minds of half the people. It has been integrated to that extent into the vocabulary likely to be available. Its degree of integration is 50%, meaning that a person taken at random from those who are likely to use either *sweater* or *chandail* is just as likely to use the one as he is to use the other. The probability of *sweater* being the word is .5 and the probability of *chandail* is also .5 in situations in which the concept is going to be expressed.

What is true for a hundred people is also true for a thousand, or for any number. And if this number is a valid sample of the population, it can be said that in the given bilingual population, the word *sweater*, no matter what its degree of availability, or its importance in a given semantic field, would have just as much chance of coming to the mind of any person chosen at random as would the word *chandail*. The words are equally probable and their degree of integration, (as expressed by this probability), is equal. This probability (.5) is neither a measure of its likelihood of occurrence (frequency), nor of the number of spoken or written texts in which it is likely to occur (range), nor its importance for a given field (availability). It simply says for a given population in a given field that a specific concept (sweater) is just

as likely to be expressed in English as it is in French. It does not say how many people use both words and to what extent, although this is information that could be obtained with a slight refinement of the technique (see below), which could also indicate for those using such doublets whether they are given different or the same roles as far as meaning or domain is concerned (for example, distinctions between *les gars, les garçons, les gosses,* and *les boys).*

The availability test is not the only possible technique enabling us better to distinguish integration from interference. There are also the tests of acceptability and translatability.

The acceptability test was suggested a few years ago by Nils Hasselmo at the Unesco International Seminar on the Description and Measurement of Bilingualism (Kelly 1969: 121-41), and later developed by him in a study of American-Swedish bilinguals (Hasselmo 1970).

The purpose of the test is to obtain a range of possible variation of selected items likely to occur in the normal, everyday speech of the bilinguals. The degree of acceptability of an item is indicated by the average score of a given group of subjects judging recorded sentences on a four-point scale. It is obtained by having each subject in a representative group of bilinguals rate constructed and actually observed test sentences containing elements from the other language. Each sentence is rated as to whether, speaking to a friend in the community, the subject would "say it that way" almost always, sometimes, never (but others would), or never (and others neither). The results reported showed a complete range of degrees of acceptability.

Another access to the code of the bilingual may be had through a test of translatability, also suggested by Hasselmo. It tests the bilingual's ability to furnish equivalents in his other language. Testing procedures are similar to those used for obtaining indices of acceptability. Here the bilingual hears words from one of his languages in the context of the other and is asked to supply the

equivalent form in the language of the text. The equivalent must cover essentially the same content as the test item. If the bilingual is unable to supply a suitable equivalent, it may perhaps be assumed that the item actually belongs to his other code, or to both. For example, in the French sentence, *Je voulais enlever la roue, mais j'ai perdu mon wrench*, one bilingual whom I tested was unable to find the French equivalent of *wrench*, insisting that it was after all a French word. Preceding translatability, Hasselmo has a test of identification to find out in which language the bilingual classified a selected group of items, identifying those which he thinks had been taken over from the other language. The results also showed a continuum, ranging from complete identification with one language to complete identification with another.

To sum up, we can try to separate a bilingual's codes in three different ways: i) by asking him what items each code contains (availability), ii) by asking him to separate items according to the code to which they belong (acceptability), iii) by asking him to transfer items from one code to the other (translatability). These different tests may really be measuring different things. An item which is not very acceptable may yet be the most readily available. We find such conflicts in situations of language contact and dialect contact, like the one exemplified in Stephen Leacock's remark before an audience in England whom he suspected of despising his Canadian accent -- "I don't like it any better than you; but it's the best I can do." A word may also be easily translated and identified as belonging to one language, and yet be more highly available than its equivalent in the other language.

Before any of these measures are used extensively, it would be important to find out the extent to which they are related and in what respect one might be used as a check on the others. It would seem, for example, that translatability could be inversely proportional to acceptability.

By co-relating the results of such tests it seems possible to determine the borrowed items in the bilingual's codes. This would add precision to the quantitative immediate-constituent analysis of recorded samples of typical speech behavior of individual bilinguals to determine the pattern and degree of interference and alternation (Mackey 1965b). It would mean giving the same three tests to representative samples of the bilingual population and calculating the percentage of integration of each item into the other language. Since I have not yet replicated acceptability or translatability tests on a group, I can supply here only an example of the use of the availability test on a sample bilingual population to obtain indications of the degree of integration of items from one code to the other.

4. INTEGRATION AND AVAILABILITY: SAMPLE MEASUREMENTS

Let us now see how these proposed measurements from the code would work on a sample population. We shall limit our demonstration to the use of availability indices as a measure of integration. The indices will be taken from a survey of the French of almost 2,000 young Acadian (French-English) bilinguals out of a bilingual population of some 200,000 representing about a third of the inhabitants living in an area of 28,000 sq. miles (New Brunswick). We shall describe (1) the scope and method of investigation before treating (2) the types of analysis and the results obtained in establishing integration probabilities.

4.1 SCOPE AND METHOD

The investigation covered a sample population of some 2,000 (1,745) bilinguals under 19 years of age. This sample population produced 33,510 pages of French vocabulary inventory which yielded a total of 887,550 word tokens in 27 semantic fields.

Because of the great volume of material gathered, we decided to limit the first analysis to the responses of the youngest age-group (under 13) in twelve areas and to 16 semantic fields (see Table 1).

This involved the analysis of 11,456 questionnaires which represented the responses of 702 informants in 16 semantic fields, yielding 286,400 tokens.

An analysis of these word tokens, with the aid of a computer yielded 64,031 different written forms each of which had to be brought together by hand under the appropriate word type. For example, the forms *quetelle, quettil, quitel,* and *ketel,* along with their frequencies, had to be rewritten under their word type, *kettle.*

The net result of this work was a list of 10,521 word types representing the total available French vocabulary of the 700 young bilinguals in the 16 semantic fields, as supplied by them in the five to seven hours of cumulative testing time. Most of this vocabulary (about 90%) was indeed French; but there were significant numbers of English words, and also loan-blends, Canadianisms and even neologisms of the bilingual's own creation (see Table 2).

Each of these 10,521 word types was then put on a punch-card along with the number of bilinguals in each age-group supplying the word. A computer program was then elaborated which would: i) arrange the words in semantic fields, ii) total the frequencies for each word type, iii) within each semantic field, arrange the words in decreasing order of frequency, iv) calculate, for each word, its percentage of the total response, v) list the rank of each word, vi) print out the results with all words grouped according to the semantic fields and ranked according to percentage of total response.

The results, as printed out by the computer, appeared in some 250 pages of tables. Each table had 12 columns which successively indicated the word, its rank, its percentage of the total population listing it, and the totals and percentages for each age-group (see Table 3).

4.2 ANALYSIS AND PROBABILITIES

The 702 informants aged 8 to 12 (reduced for some fields to 661), completed a total of 11,456 questionnaires in 16 semantic fields, produced a total of 236,400 word tokens representing 64,031 word forms which were later reduced to 10,521 word types.

Of these 10,521 different word types 4,731 (44.1%) appeared only once. The number varied according to the semantic field, the fewest being in the field of clothing (128) and the greatest number being in the field of pastimes (536).

On top of each list, word types with the highest response, which accounted for 75% of the total, were all in French. Most of the code integration from English into French was found in the lower 25% of the list, indications that the commonest words in the French language of these bilinguals were still French.

The proportion of words replaced to words retained was about 3/17, that is, the lists supplied an average of 3 English words to 17 French words. But the proportion varied according to the semantic field. For the parts of the body, it is one English word for 26 French words (English 11: French 285); whereas, for the field of cooking, the proportion of English to French is 1/5 (111/540) (see Table 2).

Some words however were counted as neither English nor French. These included 20 so-called loan-blends, 165 Canadianisms and 418 neologisms. Under loan-blends were listed such French expressions as *station à feu*, constructed on an English model (*fire-station*). Under Canadianisms, we included those items constructed from French materials but peculiar to the area from which they came, for example, *moulin à coudre*. Under neologisms, we listed all unidentified forms, many of which seemed to be of the informants own invention; for example, words like *licerpitant*. For the distribution of these three categories by semantic field, see Table 2.

But this distribution of the everyday vocabulary of the young Acadian bilinguals between English and French is not sufficient to reveal the relative importance of the French or English terms in the community. We are interested in knowing what this large percentage of English replacements actually represents, of determining the extent to which English, the transmitting language, has entered the French, the receiving language, of the community. It is evident that not everyone has replaced the French term by the English word, because for most English words we have also the French equivalents. For each word, we are able to tell the percentage of our bilingual population preserving the French word when speaking in French. For most words, these form a majority of the population. For example, whereas 95% of the bilinguals speaking French would use the word *manteau*, only 3% would use the word *coat*. There were some terms, however, like *flashlight*, *mixer*, *map*, *pickles*, *office*, and *manager*, where the English term seems to be ousting the French in the speech of the community.

We were now in a position to determine the extent to which *(Lt)* the transmitting language (English) had been integrated into the *(Lr)* receiving language (French) of the bilinguals.

4.2.1 Probabilities

The first step was to extract all available English items *(At)* from the French inventory, and then to search the inventory for French equivalents *(Ar)*. In each case we listed the percentage of the population which included the words and compared both figures. For example, in the semantic field of clothing, 94.7% included *manteau*, and only 3.1% listed *coat*. Whereas in the field of cooking, three times more people listed *mixer* or *mix-master* (6.9%) as included the French equivalent (*mélangeur* 1.8%). For other items, like *flashlight*, there was no French word listed by a single person.

Knowing the percentage of the bilingual population which include in their inventory of one language *(Lr)* a given item from the other *(Lt)* or another language (if more than two languages are involved), it is possible to calculate the probable

degree of integration (*p*I) of a vocabulary item (*V*) of the transmitting language (*Lt*), in this case, English, as a replacement for a vocabulary item in the receiving language (*Lr*), in this case, French, since it would be equal to the availability of the transmitted item (*At*) over the sum (Σ) of the availability of both items (*At* + *Ar*). Or,

$$pI\ (VLt\ >\ VLr) = \frac{At}{\Sigma A}$$

In other words, we divide the combined percentages ($\Sigma A = At + Ar$) by the percentage listed for the transmitting, or lending language and state the results as a proportion of 100. For example, in the inventories of French words for clothing, 11.4% of the bilinguals listed *foulard*, and 6.6% included *scarf*. The latter has therefore an integration probability of

$$pI = \frac{At}{\Sigma A} = \frac{6.6}{6.6 + 11.4} = \frac{6.6}{18} \doteq .367$$

This would mean that if the word *scarf* were to appear in a stretch of French speech recorded in the area, the probability that it is part of the code would be .367. If, on the other hand, the word *flashlight* were to appear there would be a probability of almost 1.00 -- that is, it is almost certain that it had been completely integrated into the local code. If the word *head* appeared however, the converse would be true; it is almost certainly not part of the local code and the probability would be almost 1.00, that is a case of interference -- not of integration. In other words, interference would be inversely proportional to integration. The more an item is integrated into a code, the less likely that its appearance in the message -- in the speech of a bilingual -- would be a case of interference.

4.2.2 Relationships

Finally, what is the relationship between integration and availability? Are they completely independent, or are they related? If so, to what extent?

A first approximation to an answer may be studied by plotting the one against the other. If we therefore take all the words in the sample selected from the 16 semantic fields and plot their degrees of availability (*At + Ar*) (first two columns in Table 4) against their probability of integration (last column of Table 4), we can see that the distribution of the points of relationship is not haphazard (see figure on Integration as related to Availability). There is an observable tendency for these points to cluster low in the availability scale. In the sample examined, most items entering the code are the least readily remembered.

If we take a closer look at the appended figure, we notice the following: a) None of the words from the transmitting language (English) represents concepts that are highly available (upper right corner of figure). Is this necessarily so, or does it reflect the fact that the basic French vocabulary of these young bilinguals is still exclusively French? b) Few highly available words have entered the code from the other language (upper half of figure). Is this because a highly available item is more strongly associated with its most usual form, or is it simply an indication of the fact that few of the important French words have been replaced? c) The great majority of the replacements occurred in words supplied by less than a third of the sample population (lower third of figure), d) More than 90% of the correlations are below the diagonal line leading from the highest degree of availability to the lowest probability. Most of those above the line represent pairs which pose special semantic problems, like those of imbalance in semantic diversity (e.g. E. *map* = F. *carte géographique; carte* = *map, postcard, card)* (Mackey 1969). These should be checked against the results of translatability tests.

An over-all glance at the figure might give the general impression that the probability of a foreign item being integrated into the other code of the bilingual is inversely proportional to its degree of availability. These figures are quite insufficient to enable one to come to such a conclusion. In the first place, they are based on only 10% of the integrated data to be found in the analysed part of the sample, since the intention is simply to illustrate a method of expressing the relativity of integration. Secondly, the data are taken from only 16 general semantic fields in a single geographical area, and within a limited age-group.

What the figure does illustrate, however, is that, for this particular age-group within the particular geographical area and language community, the probability of integration of their most important (available) concrete words is in general not high enough to oust the native equivalents. If, however, we were to present a breakdown by semantic field, some fields might show a line of a different angle, a different delineation of the pattern of relationships, in which many important words might show a high probability of integration. If we were to use subjects speaking highly mixed languages we would presumably get other patterns. In other words, the analytic procedure illustrated here might be useful to indicate the degree of mixture of languages and dialects in contact.

It may be that most items entering the code of a language start at a low level of availability, but only after the probability of remembering the native word has declined sufficiently to make the probability of the foreign equivalent dominant. Whether or not this is always the case can be decided only after extensive surveys and widespread experimentation with different semantic fields, different populations and different languages.

The results presented here are valid only for the Acadian areas of the Canadian Maritimes, particularly those in New Brunswick, for a limited age-group and for a few of the most concrete and universal semantic fields. It would now be necessary to extend the analysis to other semantic fields and other age-groups in order to find out whether or not the relationship between integration and availability changes with age and area.

CONCLUSION

Until then we may hazard the following general conclusions on the analysis of integration as distinct from interference:

1. Conventional synchronic analysis is unsuited to the description of mixed and rapidly changing codes.

2. Code integration is relative.

3. Its relativity can be measured.

4. Interference can be stated in terms of this relative integration.

This may not be the only way out of the dilemma but I should be satisfied if this paper gives some indication that a way can be found.

TABLE 1

SAMPLE POPULATION: AGE AND AREA DISTRIBUTION

Age-group	*Town*	*County*	*No. of bilinguals*
8-9	St-Jacques	Madawaska	35
8-9	Bathurst	Gloucester	26
9-10	St-Jacques	Madawaska	35
9-10	Bathurst	Gloucester	25
9-10	Shippegan	Gloucester	100
9-10	Petit Rocher	Restigouche	90
9-10	Drummond	Victoria	36
10-11	Bathurst	Gloucester	31
10-11	Shédiac	Westmorland	26
10-11	Rivière-du-Portage	Gloucester	40
10-11	Rogersville	Kent	33
10-11	Tracadie	Gloucester	37
10-11	Ste-Anne	Madawaska	35
10-11	St-François	Madawaska	28
11-12	Bathurst	Gloucester	27
11-12	Campbellton	Restigouche	29
11-12	Tracadie	Gloucester	83
TOTAL			702

TABLE 2

SEMANTIC FIELDS: DISTRIBUTION OF VOCABULARIES

Semantic Field (in French)	*French*	*English*	*Canadian*	*Blends*	*Neol.*	*Totals*
1. The Body	285	11	3	0	24	323
2. Clothing	248	94	5	0	13	360
3. Housing	569	84	10	0	13	676
4. Furniture	474	80	16	0	9	579
5. Food	346	104	3	2	33	488
6. Meals	332	61	2	4	9	408
7. Cooking	549	111	11	0	14	685
8. Schooling	597	83	11	0	13	704
9. Heating&Light	477	56	4		41	578
10. City Life	760	109	2	0	33	904
11. Town&Village	605	112	8	1	18	744
12. Transport	501	103	5	0	37	646
13. Farming	688	64	16	4	36	808
14. Animals	249	44	3	0	41	337
15. Games	874	189	30	5	45	1143
16. Occupations	951	106	36	4	39	1138
TOTALS	8505	1401	165	20	418	10,521

TABLE 3

(COMPUTATION: SAMPLE OF COMPUTER PRINT-OUT)

CUISINE

Age	9 - 12	9		10		11		12	
Population	± 700	61		267		203		123	
	rank	%	*pop.*	%	*pop.*	%	*pop.*	%	*pop.*
POELE	1	92.5	605	68.8	42	95.8	256	94.5	192	93.4	115
TABLE	2	82.2	538	86.8	53	85.3	228	74.8	152	85.3	105
CHAISE	3	78.1	511	70.4	43	80.8	216	72.4	147	85.3	105
ARMOIRE	4	74.3	486	63.9	39	79.7	213	59.6	121	91.8	113
CUILLERE	5	68.3	447	26.2	16	48.6	130	110.3	224	62.6	77
COUTEAU	6	64.5	422	32.7	20	50.1	134	92.1	187	65.8	81
FOURCHETTE	7	62.8	411	29.5	18	48.3	129	93.1	189	60.9	75
ASSIETTE	8	52.9	346	22.9	14	41.1	110	75.3	153	56.0	69
CHAUDRON	9	39.6	259	26.2	16	47.1	126	36.4	74	34.9	43
TASSE	10	37.6	246	18.0	11	32.5	87	48.2	98	40.6	50
PLAT	11	35.0	229	18.0	11	42.3	113	34.4	70	28.4	35
VERRE	11	35.0	229	21.3	13	27.7	74	43.8	89	43.0	53
FRIGIDAIRE	13	30.1	197	9.8	6	36.7	98	25.1	51	34.1	42
REFRIGERATEUR	14	29.9	196	32.7	20	22.4	60	31.0	63	43.0	53
RADIO	15	24.1	158	8.1	5	29.2	78	20.6	42	26.8	33
LAVEUSE	16	22.4	147	8.1	5	23.9	64	19.7	40	30.8	38
SINK	17	22.0	144	9.8	6	29.9	80	20.1	41	13.8	17
BOITE	18	21.8	143	1.6	1	19.4	52	21.1	43	38.2	47
EVIER	19	21.4	140	24.5	15	13.8	37	25.1	51	30.0	37
PORTE	20	17.7	116	34.4	21	19.4	52	5.4	11	26.0	32
HORLOGE	21	16.6	109	4.9	3	13.8	37	13.7	28	33.3	41
BOL	22	15.2	100	13.1	8	11.6	31	24.6	50	8.9	11
SOUCOUPE	23	14.5	95	3.2	2	13.8	37	15.2	31	20.3	25
FENETRE	24	14.3	94	32.7	20	12.7	34	5.4	11	23.5	29
TIROIR	24	14.3	94	1.6	1	20.9	56	9.8	20	13.8	17
PAN	26	13.9	91	8.1	5	20.2	54	8.3	17	12.1	15
LUMIERE	27	13.7	90	19.6	12	17.6	47	6.8	14	13.8	17
SALIERE	28	12.8	84	.0	0	8.2	22	22.6	46	13.0	16
CAN	29	11.4	75	6.5	4	13.1	35	14.7	30	4.8	6
GRILLE-PAIN	30	11.3	74	8.1	5	4.4	12	21.1	43	11.3	14
POIVRIERE	31	11.1	73	.0	0	6.7	18	20.6	42	10.5	13
SECHEUSE	31	11.1	73	3.2	2	9.3	25	13.7	28	14.6	18
POMPE	33	10.8	71	3.2	2	8.2	22	9.3	19	22.7	28
BALAI	34	10.5	69	6.5	4	10.8	29	5.9	12	19.5	24
BOMBE	35	10.3	68	6.5	4	11.6	31	10.3	21	9.7	12
RIDEAU	35	10.3	68	9.8	6	11.2	30	5.9	12	16.2	20
VAISSELLE	37	9.7	64	6.5	4	10.1	27	6.8	14	15.4	19
TELEVISION	38	9.4	62	9.8	6	13.4	36	6.4	13	5.6	7
PLANCHE A REPASSER	39	9.3	61	8.1	5	8.2	22	7.8	16	14.6	18
TOASTER	39	9.3	61	1.6	1	10.4	28	9.3	19	10.5	13
CAFETIERE	41	9.0	59	4.9	3	8.9	24	9.3	19	10.5	13
PORTRAIT	42	8.7	57	4.9	3	7.4	20	5.4	11	18.6	23
BATTEUR-D'OEUFS	43	8.5	56	8.1	5	10.8	29	7.8	16	4.8	6
SUCRIER	43	8.5	56	1.6	1	4.8	13	16.2	33	7.3	9
TELEPHONE	43	8.5	56	3.2	2	9.3	25	8.3	17	9.7	12
POT	46	8.4	55	1.6	1	2.9	8	16.7	34	9.7	12
MIROIR	47	8.2	54	6.5	4	8.6	23	5.4	11	13.0	16
THEPOT	48	7.9	52	.0	0	6.3	17	14.7	30	4.0	5
LAVABO	49	7.7	51	1.6	1	9.7	26	4.9	10	11.3	14
BEURRIER	50	7.1	47	1.6	1	4.1	11	12.3	25	8.1	10
FAUTEUIL	51	7.0	46	4.9	3	2.2	6	3.9	8	23.5	29
CHAISE BERCEUSE	52	6.8	45	4.9	3	10.4	28	4.4	9	4.0	5
BOUILLOIRE	53	6.4	42	.0	0	7.4	20	3.4	7	12.1	15
COUTEAU A PAIN	53	6.4	42	1.6	1	1.4	4	15.2	31	4.8	6
NAPPE	53	6.4	42	3.2	2	3.3	9	9.8	20	8.9	11
BANC	56	5.9	39	1.6	1	9.3	25	3.4	7	4.8	6
CASSEROLE	56	5.9	39	9.8	6	6.3	17	6.4	13	2.4	3
GARDE-ROBE	56	5.9	39	3.2	2	7.1	19	3.4	7	8.9	11
FOURNEAU	59	5.8	38	19.6	12	5.2	14	1.9	4	6.5	8
CALENDRIER	60	5.6	37	3.2	2	4.8	13	2.4	5	13.8	17
FER A REPASSER	60	5.6	37	1.6	1	5.2	14	6.4	13	7.3	9
CRUCIFIX	62	5.5	36	.0	0	6.3	17	3.9	8	8.9	11
CHANTEPLEURE	63	5.0	33	1.6	1	6.7	18	5.4	11	2.4	3
MACHINE A LAVER	63	5.0	33	.0	0	2.9	8	6.4	13	9.7	12
COUTEAU A VIANDE	65	4.8	32	.0	0	2.2	6	10.3	21	4.0	5
CUP	65	4.8	32	.0	0	2.9	8	11.8	24	.0	0
EAU	65	4.8	32	6.5	4	4.8	13	5.9	12	2.4	3

TABLE 4

INTEGRATION PROBABILITIES: ENGLISH INTO FRENCH

English (*At*)	>	French (*Ar*)	pI
1. The Body:			
brain .3%	/	*cerveau* 15.2%	0.019
jaw .1%	/	*mâchoire* 1.6%	0.058
2. Clothing:			
sweater 8.7%	/	*chandail* 86.9%	0.091
jumper 1.1%	/	_____ 86.9%	0.012
suit 8.1%	/	*habit* 13.6%	0.373
scarf 6.6%	/	*foulard* 11.4%	0.366
belt 5.2%	/	*ceinture* 17.5%	0.229
slacks 5.2%	/	*pantalons* 78.1%	0.062
coat 3.1%	/	*manteau* 94.7%	0.031
skirt 2.3%	/	*jupe* 61.1%	0.036
overalls 1.6%	/	*salopettes* 5.9%	0.213
tie 1.1%	/	*cravate* 46.2%	0.232
boots .2%	/	*bottes* 29.7%	0.006
_____ .2%	/	*bottines* 18.3%	0.108
slippers .1%	/	*pantoufles* 13.6%	0.007
3. Housing:			
sink 4.8%	/	*évier* 6.0%	0.444
attic 2.3%	/	*grenier* 26.3%	0.080
plug .7%	/	*prise de courant* .4%	0.636

English (*At*)	>	French (*Ar*)	*pI*
4. Furniture:			
sink 12.2%	/	*évier* 18.0%	0.403
_____ 12.2%	/	*lavabo* 13.5%	0.474
fridge 3.7%	/	*réfrigérateur* 28.8%	0.113
_____ 3.7%	/	*frigidaire* 31.0%	0.106
desk 3.2%	/	*pupître* 17.9%	0.151
bath-tub 2.8%	/	*bain* 11.7%	0.193
lights 2.5%	/	*lumières* 18.2%	0.120
chesterfield 2.3%	/	*sofa* 41.6%	0.052
_____ 2.3%	/	*divan* 8.6%	0.211
washer .7%	/	*laveuse* 44.3%	0.001
_____ .7%	/	*machine à laver* 5.9%	0.010
5. Food:			
bean 4.7%	/	*fève* 30.0%	0.013
pickle 2.6%	/	*cornichon* 1.0%	0.722
corn .5%	/	*blé d'Inde* 25.7%	0.019
radish .1%	/	*radis* 4.7%	0.020
6. Meals:			
cup 10.2%	/	*tasse* 84.9%	0.107
napkin 6.6%	/	*serviette* 18.3%	0.265
glass 1.0%	/	*verre* 87.9%	0.001
salt .4%	/	*sel* 9.3%	0.041
fork .3%	/	*fourchette* 99.7%	0.030

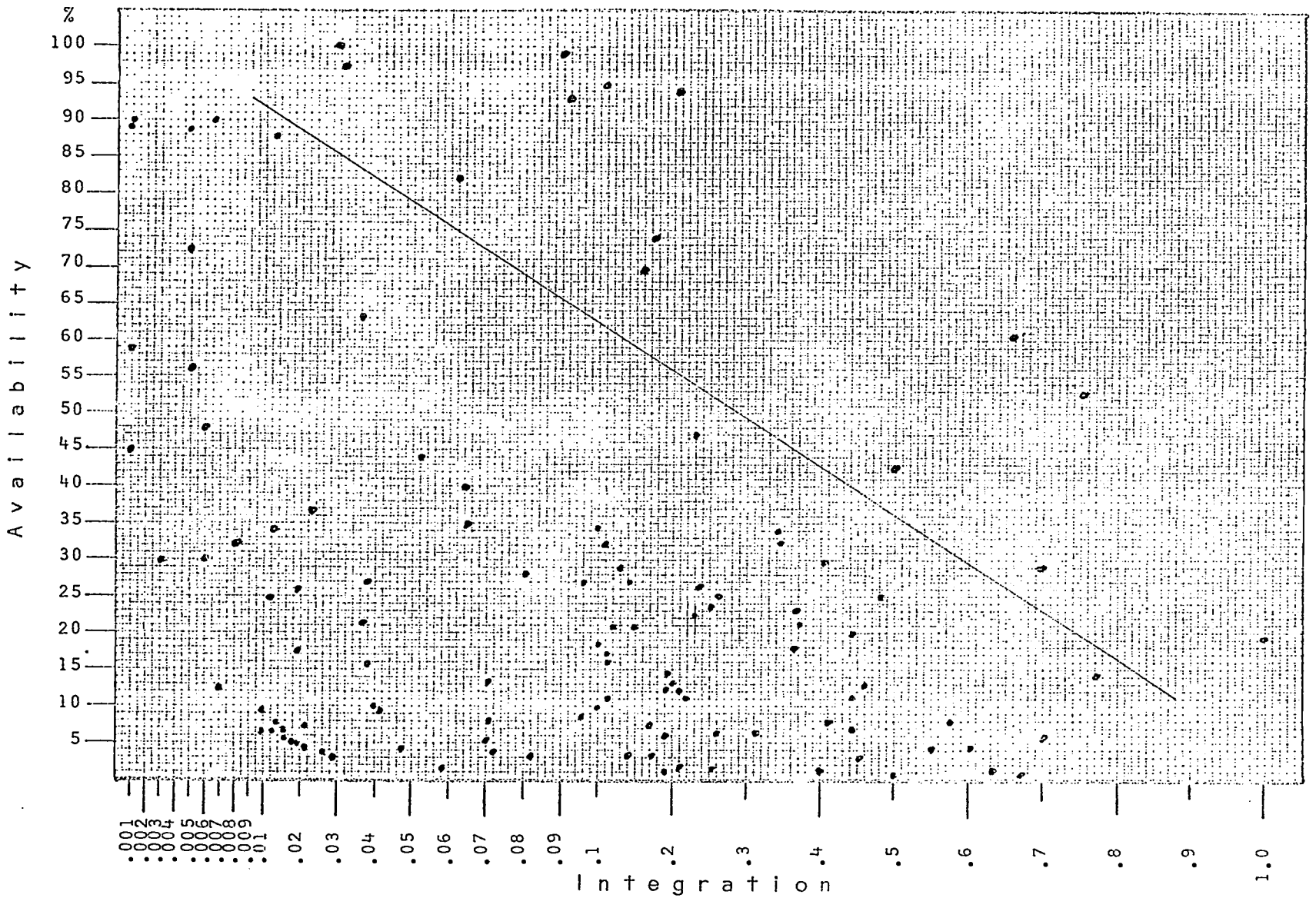
English (*At*)	>	French (*Ar*)	pI
7. Cooking:			
sink 22.0%	/	*évier* 21.4%	0.506
_____ 22.0%	/	*lavabo* 7.7%	0.740
can 11.4%	/	*boîte* 21.8%	0.343
toaster 9.3%	/	*grille-pain* 11.3%	0.451
mixer 2.7%	/	*mélangeur* 1.8%	0.600
mix-master 4.2%	/	_____ 1.8%	0.700
8. Schooling:			
map 40.3%	/	*carte géographique* 21.1%	0.656
_____ 40.3%	/	*carte* 13.5%	0.749
pen .1%	/	*plume* 63.9%	0.001
_____ .1%	/	*stylo* 6.0%	0.016
pencil .1%	/	*crayon* 90.3%	0.001
9. Heating and Light:			
flashlight 19.1%	/	*lampe de poche* 0%	1.000
bulb 7.8%	/	*ampoule* 15.3%	0.337
heater 2.5%	/	*chaufferette* 10.1%	0.198
fireplace 2.1%	/	*foyer* 4.5%	0.318
oil 1.3%	/	*huile* 73.5%	0.173
furnace 1.2%	/	*fournaise* 68.7%	0.171
stove .4%	/	*poêle* 94.3%	0.004
10. City Life:			
office 11.5%	/	*bureau* 3.1%	0.787
post-office 6.5%	/	*bureau de poste* 21.3%	0.233

English (At)	>	French (Ar)	pI
fire station 1.5%/		*poste de pompier* 4.4%	0.254
barber 1.3%	/	*barbier* 10.2%	0.113
_____ 1.3%	/	*coiffeur* 6.2%	0.173
11. Town and Village:			
bowling-alley .4%/		*salle de quilles* 5.2%	0.070
bank 1.8%	/	*banque* 14.3%	0.111
drugstore .6%	/	*pharmacie* 2.7%	0.181
fire station .4%/		*poste de pompiers* 1.5%	0.210
_____ .4%	/	*station de pompier* .6%	0.400
_____ .4%	/	*bâtisse à incendie* .2%	0.666
liquor store .4%/		*commission des liqueurs* 2.5%	0.137
city hall .2%	/	*hôtel de ville* .9%	0.188
12. Transport:			
truck 19.8%	/	*camion* 74.8%	0.209
trolley 3.2%	/	*tramway* 4.0%	0.444
streetcar .2%	/	_____ 4.0%	0.047
boat .6%	/	*bateau* 89.7%	0.006
steamer .4%	/	*bateau à vapeur* 1.2%	0.250
13. Farming:			
digger 1.5%	/	*bêcher* 1.8%	0.454
bin .3%	/	*bacul* .3%	0.500
row .1%	/	*sillon* 9.8%	0.010
flower .1%	/	*fleur* 12.6%	0.007
weeding .1%	/	*esherbage* 5.0%	0.019
spray .1%	/	*arroseur* 5.2%	0.018

English (At)	>	French (Ar)	pI
14. Animals:			
buffalo 2.8%	/	*bison* 10.7%	0.207
raccoon 1.2%	/	*raton laveur* 5.3%	0.187
cat .9%	/	*chat* 98.1%	0.090
lamb .6%	/	*agneau* 7.8%	0.071
beaver .4%	/	*castor* 27.8%	0.141
pig .4%	/	*cochon* 72.1%	0.005
deer .3%	/	*chevreuil* 56.0%	0.005
monkey .3%	/	*singe* 33.3%	0.008
15. Games:			
basket-ball 11.3%	/	*ballon-panier* 21.0%	0.349
race 3.8%	/	*course* 25.1%	0.131
bowling 2.6%	/	*quilles* 24.1%	0.097
checkers 2.3%	/	*dames* 32.8%	0.065
volley-ball 2.3%	/	*ballon-volant* 5.1%	0.310
cards .3%	/	*cartes* 48.0%	0.006
16. Occupations:			
manager 4.6%	/	*gérant* 3.4%	0.575
boss .3%	/	_____ 3.4%	0.081
nurse 2.6%	/	*garde-malade* 37.5%	0.064
_____ 2.6%	/	*garde* 2.1%	0.553
engineer 2.5%	/	*ingénieur* 8.5%	0.227
cook 2.1%	/	*cuisinier* 14.8%	0.124
plumber 1.0%	/	*plombier* 26.5%	0.037

English (*At*)	>	French (*Ar*)	pI
farmer .9%	/	*fermier* 36.7%	0.023
_____ .9%	/	*cultivateur* 8.5%	0.095
driver .6%	/	*chauffeur* 23.2%	0.252
garageman .6%	/	*garagiste* 15.3%	0.037
milkman .4%	/	*laitier* 9.5%	0.040
lumber-jack .3%	/	*bûcheron* 24.5%	0.012
reporter .1%	/	*journaliste* 6.4%	0.015
secretary .1%	/	*secrétaire* 9.6%	0.010

INTEGRATION AS RELATED TO AVAILABILITY



Each point represents the relation between the combined (French and English) availability of a sample word and the probability that its English form will enter the French vocabulary code of the sample population (700 Acadians).

REFERENCES

Bousfield, W.A. and Barclay, W.D. 1950. The Relationship between Order and Frequency of Occurrence of Restricted Associative Responses. *Journal of Experimental Psychology* 40: 643-647.

Brotsky, S.J., Butler, D.C. and Linton, M.L. 1967. Association Time, Commonality, and the Test-retest Reliability of Free Association Responses. *Psychonomic Science* 9: 319-320.

Chomsky, N. 1964. Degrees of Grammaticalness. *The Structure of Language: Readings in the Philosophy of Language*. Jerry Fodor & Ferrold Katz, eds. Englewood Cliffs, N.J.: Prentice-Hall.

Coleman, E.B. 1965. Responses to a Scale of Grammaticalness. *Journal of Verbal Learning and Verbal Behavior* 4: 521-527.

Deroy, L. 1956. *L'emprunt linguistique*. Paris: Les Belles Lettres.

Diebold, A.R. 1961. Code-Switching in Greek-English Bilingual Speech. *Georgetown University Monograph Series on Languages and Linguistics* 15: 53-59.

Fishman, J.A. 1964. Language Maintenance and Language Shift as a Field of Inquiry; a definition of the field and suggestions for its further development. *Linguistics* 9: 32-70.

Green, E. 1963. On Grading Phonic Interference. *Language Learning* 13: 85-96.

Gumperz, J.J. 1964. Linguistic and Social Interaction in Two Communities. *American Anthropologist* 66 (6, Part 2): 137-153.

Hasselmo, Nils. 1970. On Diversity in American-Swedish. (Unpublished paper). Mimeographed, University of Minnesota.

Haugen, E.I. 1950. The Analysis of Linguistic Borrowing. *Language* 26: 210-231.

Herdan, G. 1966. How can Quantitative Methods Contribute to Our Understanding of Language Mixture and Language Borrowing? *Statistique et Analyse linguistique*. Paris: Presses universitaires de France, 17-39.

Hill, A.A. 1961. Grammaticality. *Word* 17: 1-10.

Jakobovits, L.A. and Lambert, W.E. 1961. Semantic Satiation among Bilinguals. *Journal of Experimental Psychology* 62: 576-582.

Kelly, L.G., ed. 1969. *Description et mesure du bilinguisme/ Description and Measurement of Bilingualism.* Toronto: University of Toronto Press (for the Canadian Unesco Commission).

Labov, W. 1966. *The Social Stratification of English in New York City.* Washington: Center for Applied Linguistics.

_____ 1969. Contraction deletion and inherent variability of the English Copula. *Language* 45: 715-762.

Lambert, W.E. 1955. Measurement of the Linguistic Dominance of Bilinguals. *The Journal of Abnormal and Social Psychology* 50: 197-200.

Le Page, R.B. 1968. Problems of Description in Multilingual Communities. *Transactions of the Philological Society of Great Britain* 1968: 189-212.

Mackey, W.F. 1953. Bilingualism and Linguistic Structure. *Culture* 14: 143-149.

_____ 1965a. *Language Teaching Analysis* (Chapter 6). London and Bloomington: Longmans and Indiana University Press.

_____ 1965b. Bilingual Interference: Its Analysis and Measurement. *The Journal of Communication* 15: 239-249.

_____ 1966. The Measurement of Bilingual Behavior. *Canadian Psychologist* 7: 75-92.

_____ 1967. *Bilingualism as a World Problem.* Montreal: Harvest House.

_____ 1969. Concept Categories as Measures of Culture Distance. Quebec: I.C.R.B. (Prepared for *Man, Language and Society.* The Hague: Mouton (in the press).

_____ 1970a. Optimization of the Population-Response Ratio in Lexicometric Sampling. Quèbec: I.C.R.B. (To appear in *Tijdsschrift voor Toegepaste Linguistiek).*

_____ 1970b. Toward a Quantum Linguistics. Quèbec: I.C.R.B. (Prepared for the Linguistic Department Seminar of McGill University).

_____ *Theory and Method in the Study of Bilingualism.* London: Oxford University Press (in the press).

Maclay, H. and Sleator, M.D. 1960. Responses to language: Judgment of grammaticalness. *International Journal of American Linguistics* 26: 275-282.

Quirk, R. and Svartvik, J. 1966. *Investigating Linguistic Acceptability.* The Hague: Mouton.

Saussure, de F. 1915. *Cours de linguistique générale* (5 ed., 1960). Paris: Payot.

Thumb, A. and Marbe, Karl. 1901. *Experimentelle Untersuchungen über die psychologischen Grundlagen der sprachlichen Analogiebildung.* Leipzig: Engelman.

Weinreich, U. 1953. *Languages in Contact; findings and problems.* New York: Linguistic Circle of New York (Series: Linguistic Circle of New York, Publications, No. 1).

_____ 1957. On the Description of Phonic Interference. *Word* 13: 1-11.